



Hot air swells and rises

When air is heated it gets lighter and rises. This is why the gases from a fire go up a chimney, why hot air balloons work and even why the clouds float.

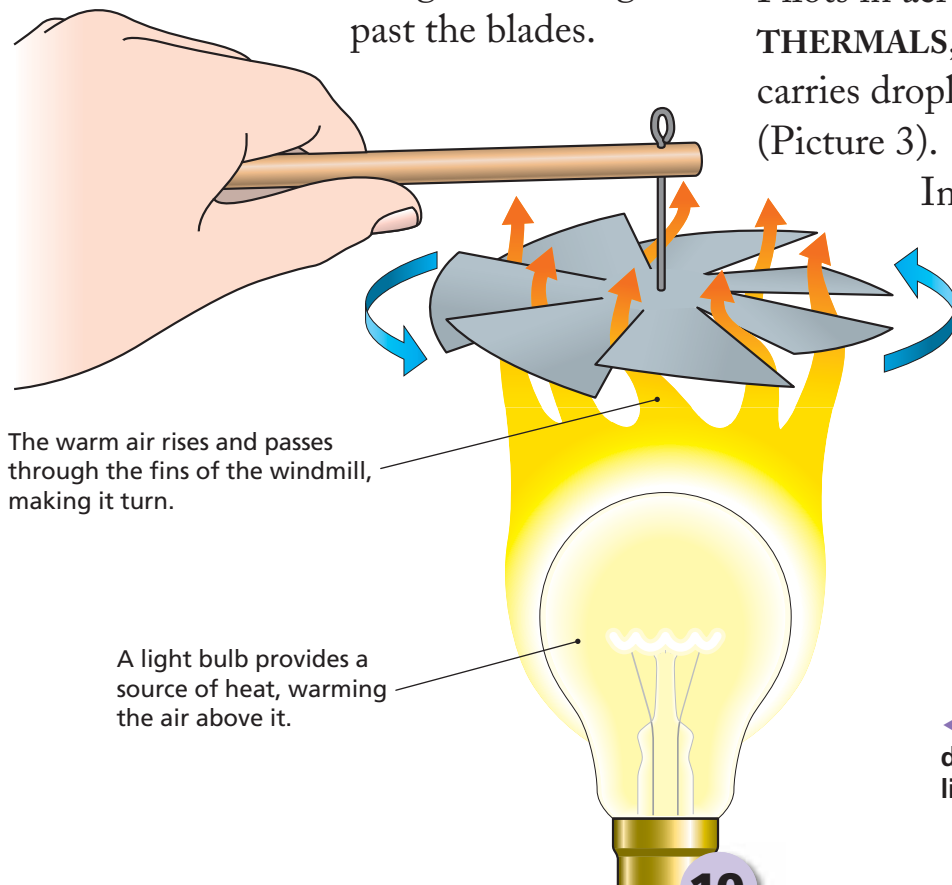
Have you ever watched the sparks and flames flickering up from a bonfire? They don't go sideways or down, they go up.

The sparks and smoke are being carried up by invisible hot air.

Whenever air gets hot it swells and becomes lighter. Because warm air is lighter, it rises.

Rising air detector

Because the air is invisible, it is difficult to see it rising. But a light bulb will warm enough air to turn a paper windmill (Picture 1). The windmill turns because the air is rising and flowing past the blades.



Hot air balloon

A hot air balloon is another way of seeing hot air on the move. In this case, the balloonist blows hot air into the balloon. The hot air gets trapped inside the balloon and it rises, lifting the balloon and basket off the ground (Picture 2).

Clouds

Air does not have to be very hot before it starts to rise. It only has to be slightly warmer than its surroundings.

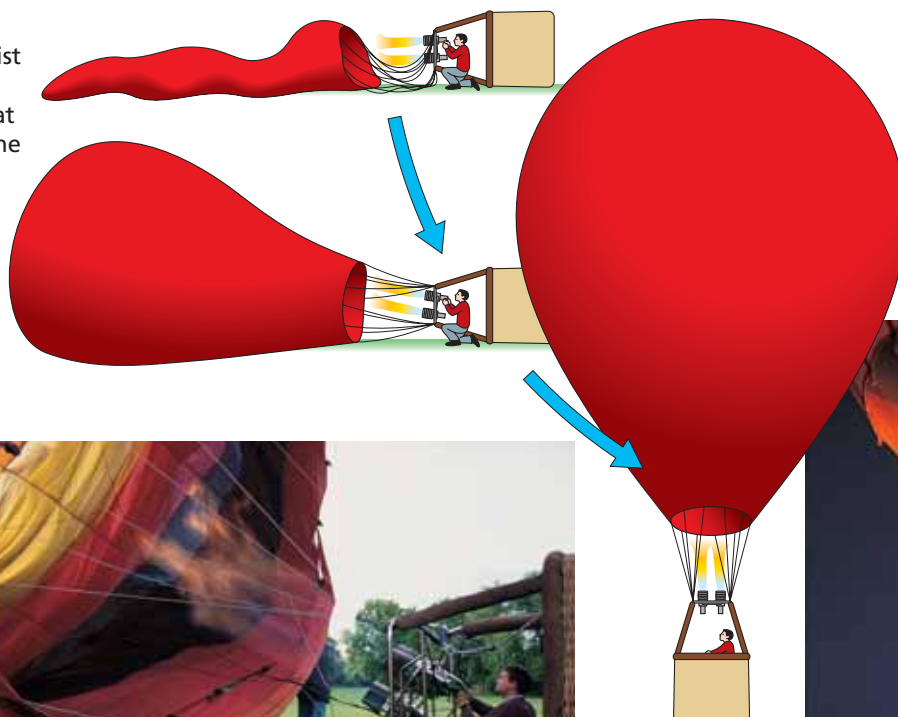
Nature can produce some spectacular displays when slightly warmed air rises. Pilots in aeroplanes call such rising air **THERMALS**, and when this rising air carries droplets of water, it forms clouds (Picture 3).

In this case, the shape of the cloud shows us the shape of the rising hot air, which is not unlike a hot air balloon, is it?

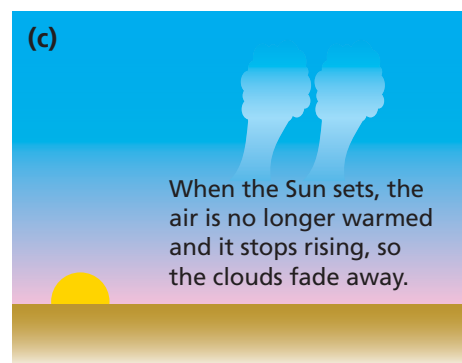
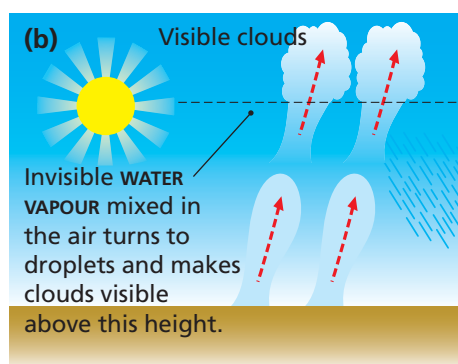
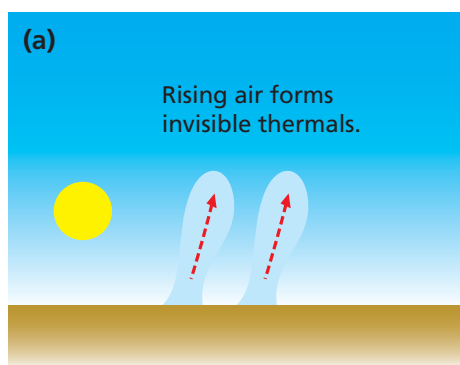
◀ (Picture 1) This small windmill detects rising air. It will work over a light bulb or a room radiator.

▼ (Picture 2) The stages in lifting a hot air balloon.

The balloonist uses a gas flame to heat air and fill the balloon.



The balloonist can change the height of the balloon by adding more heat.



▲ (Picture 3) How bubbling clouds are formed on still, sunny days.

(a) Air is warmed by the Sun each day.

(b) The warmed air begins to rise and clouds form.

(c) When the Sun sets and no longer warms the land, the air stops rising and no new clouds are formed.

Summary

- Warm air rises.
- Warm air takes up more space than cool air.
- Clouds are formed when warm air rises.